

Study of the Antimicrobial Effect of Total Extract of *Tribulus Terrestris* L and It's Fraction "Benzoxazine Against Some Gram Positive and Negative Bacteria

Mojdeh Hakemi Vala*¹; Faramarz Kobarfar²; Mohammad Kamali Nejad³; Melina Makhmor⁴; Parviz Kavakeb⁵

1- Department of Microbiology, Shahid Beheshti University of Medical Sciences, Tehran, Iran

2-Department of Medicinal Chemistry, Shahid Beheshti University of Pharmaceutical Sciences, Tehran, Iran

3-Pharmaceutics Department, Shahid Beheshti University of Pharmaceutical Sciences, Iran

4- Pharmaceutical Sciences Branch, Islamic Azad University, Tehran, Iran

5-Sina Hospital, Tehran University of Medical Sciences, Tehran, Iran

mojdeh_hakemi@yahoo.com

Background & Objectives: In this study the anti bacterial effect of total extract of *Tribullus terrestris* L and its fraction Benzoxazine (Terresoxazine) was studied for the first time in Iran.

Methods: Total aqueous extract of aerial parts of the plant was prepared and in order to separate the components of aqueous extract, liquid/liquid extraction with petroleum ether was used. Formation of three layers was the result of this extraction. Layers included water fraction, Petroleum ether was used. LC/MS system proved the existence of Benzoxazine derivative in the water fraction and the third's fraction. Antibacterial effects of total extract, water fraction and the third fraction (which were the layers formed after the extraction process) were examined by cup plate Methods and MIC and MBC were determined by micro-dilution methods.

Results: Of 10 evaluated bacteria, the total extract showed anti bacterial effects only against *E.coli*, *P.aeruginosa* and *B. subtilis*. Size of the inhibition zone increased with increasing the density of the extract. Fraction containing Benzoxazine derivative had no effect against tested bacteria. MIC and MBC determination showed that *B. subtilis* had the least sensitivity to the total extract, comparing to other bacteria. Besides, comparing the inhibition zone of Penicillin 200mg/ml and the inhabitation zone of the total aqueous extract shows that the solution of total extract in water with 1000mg/ml density and the solution of total extract in DMSO 10% with 750 mg/ml density can be used instead of Penicillin (200mg/ml) in *P.aeruginosa* infections.

Conclusion: Because of antibacterial effects of *Tribulus terrestris* L against both gram negative and gram positive bacteria, and no anti bacterial effects of the fraction containing Benzoxazine derivative, it can be concluded that anti bacterial effects of the total extract is due to other active ingredients or it is because of the cumulating of different components in total extract. Therefore separation of other components of total extract and determination of their anti bacterial effects can be future subjects for researches about this plant.

Keywords: *Tribullus terrestris* L; Anti Bacterial Effect; Benzoxazine